

- McMINN, H. E. 1939. An illustrated manual of California shrubs. Univ. Calif. Press, Berkeley.
- MUNZ, P. A. 1959. A California flora. Univ. Calif. Press, Berkeley.
- ROOF, J. B. 1962. Two new species of *Arctostaphylos* from California. *Leaflet West. Bot.* 9:217-222.
- . 1964. The nature and distribution of *Arctostaphylos rosei* Eastwood. *Four Seasons* 1(1):1-15.
- . 1967. *Arctostaphylos montaraensis*, a new species of manzanita from San Mateo County, California. *Four Seasons* 2(3):6-16.
- SCHREIBER, B. O. 1940. The *Arctostaphylos canescens* complex. *Am. Midl. Nat.* 23: 617-632.
- STEBBINS, G. L., and J. MAJOR. 1965. Endemism and speciation in the California flora. *Ecol. Monogr.* 35:1-35.
- WELLS, P. V. 1961. A new manzanita from the Santa Lucia Range, California. *Leaflet West Bot.* 9:152-153.
- . 1965. A misplaced manzanita from the Santa Lucia Range, California. *Leaflet West. Bot.* 10:176-178.

NOTES AND NEWS

NOTES ON *MADIA SATIVA* AND RELATED SPECIES.—*Madia capitata* Nutt., *M. sativa* Molina and *M. gracilis* (Smith) Keck are closely related and often difficult to distinguish. They tend to intergrade and diagnoses in current manuals lack clearcut characteristics by which to delimit the species. In 1965, at the suggestion of John Thomas Howell, I checked the odors of these plants in the field in the Santa Cruz Mountains, central California. Odor is one of the distinguishing characteristics given, although not a very satisfactory one, for two reasons: 1, it applies only to fresh material, and 2, there are no names for odors as such. Names for odors are always given as similar to other, supposedly universally known ones, or in terms of subjective reaction, which necessarily varies from person to person.

The first discovery of this investigation was rather surprising. The troublesome forms intermediate between *M. sativa* and *M. gracilis* smelled different from either of these species, being basically similar but lacking both the spicy fragrance of *gracilis* and the heavy unpleasant odor of *sativa*. These considerations led me to speculate that another distinct entity probably was involved and, with the encouragement of Rimo Bacigalupi, I attempted a diagnosis of this "new" variety (as I would have evaluated it) under an appropriately descriptive epithet, based on *Hesse 3318* (JEPS). This analysis proved inconclusive because morphological characters proved to be varyingly intermediate, with the single exception of the achenes, which were found to be consistently small (only a little longer than those of *gracilis*) and slender; in shape most nearly like those of *capitata*. Howell had further commented that probably sometime someone would conclude that all these species were in reality one variable species. If so, the earliest name, *M. sativa*, should be used. There is much to be said in favor of this idea. For instance, my specimens, 3315 (CAS), 3317, 3237, 3316, 3318, 3234, 3321, 3319, and 3232 (all JEPS) form an almost continuous series, morphologically, from *gracilis* to *capitata*. Moreover, further investigation showed that even the odors of this complex graded into one another, i.e., all the intermediate forms did not smell exactly the same but tended toward one or another of the species heretofore recognized. It is my hope that these investigations will be of help to those who may wish to delve more deeply into the *Madia sativa* complex.—V. F. HESSE, Boulder Creek, California.